p. 84 #69-72, 73-84 ($\frac{1}{2}$ but do #82)

HW

p. 69 #6, 10, 18, 21-24, 31, 32, 37, 80, 81

Do these

① Without a calc., draw a graph, list transformations, write using function notation

ⓐ $f(x) = 3(x+4)^2 - 1$

ⓑ $f(x) = -\frac{1}{2}|x-1| + 2$

vert stretch 3, lft 4, down 1

$h(x) = 3f(x+4) - 1$

up 2

$h(x) = -\frac{1}{2}f(x-1) + 2$

flip x-axis, vert. compression, rt 1

② Find the inverses of each

ⓒ $f(x) = 4x + 9$

$y = \frac{x-9}{4}$

ⓓ $f(x) = \frac{\sqrt{x+2}}{5}$

$y = \frac{\sqrt{x+2}}{5}$

① replace f(x) w/ y

② switch x & y

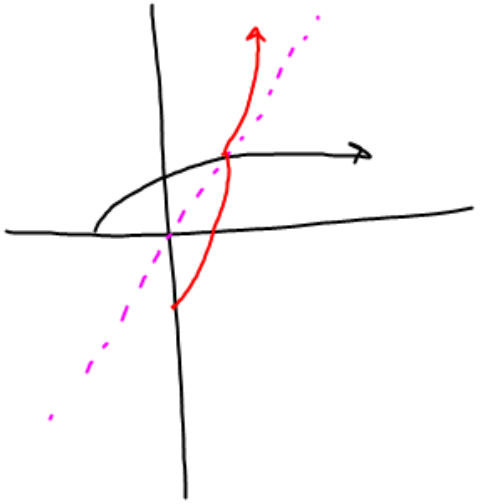
③ solve for y

$5 \cdot x = \frac{\sqrt{y+2}}{5} \cdot 5$

$(5x)^2 = (\sqrt{y+2})^2$

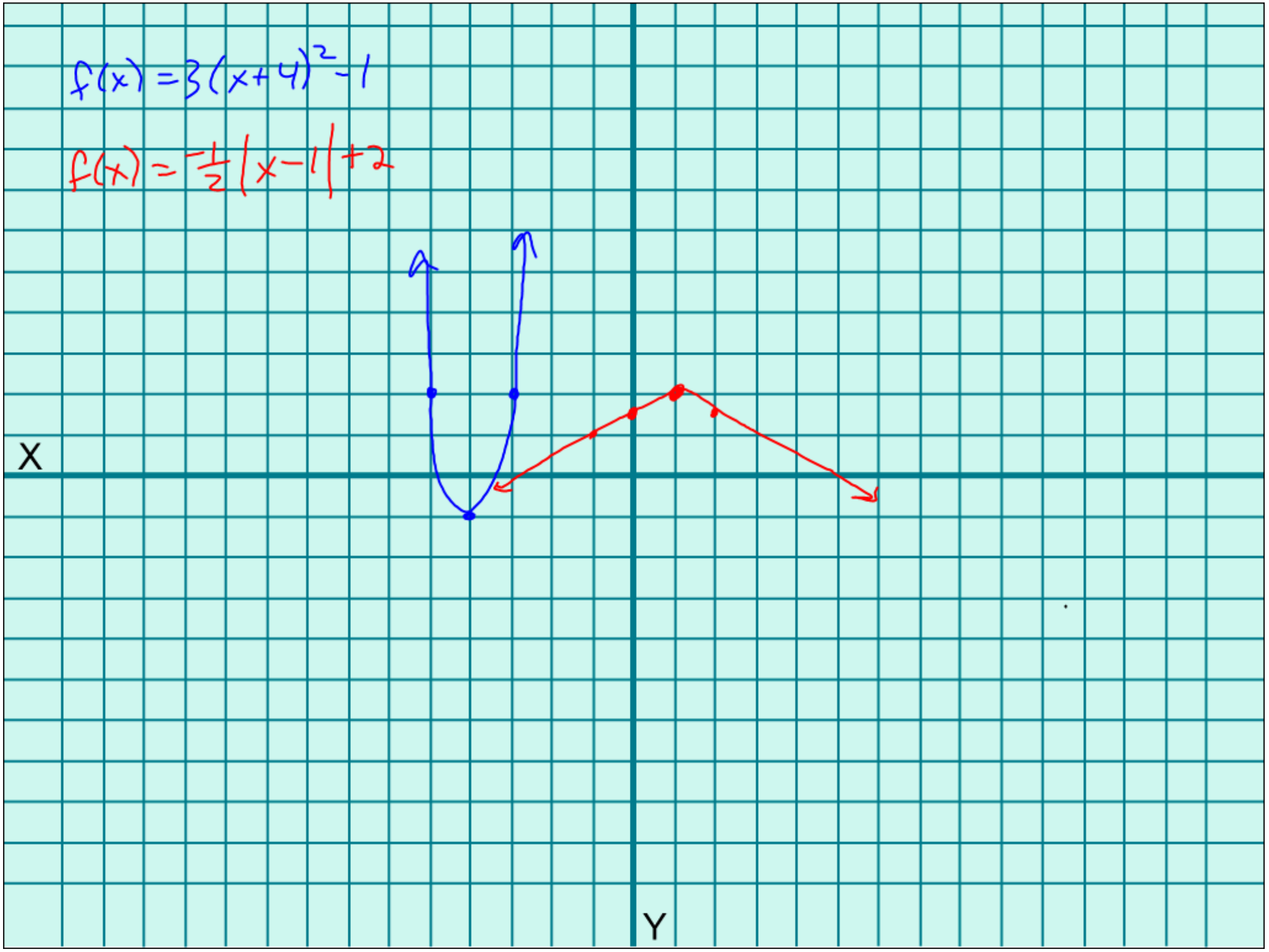
$25x^2 = y + 2$

$25x^2 - 2 = y$



$f(x) = 3(x+4)^2 - 1$

$f(x) = -\frac{1}{2}|x-1|+2$

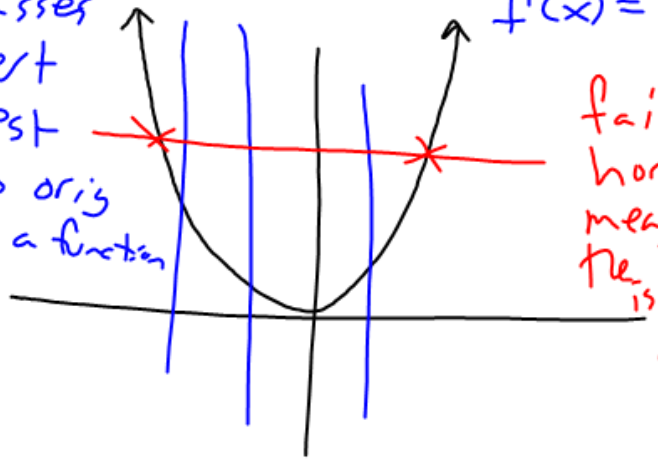


Vertical Line Test – Answers the question – is the original equation a function?

Horizontal Line Test – Answers the question – will the inverse be a function?

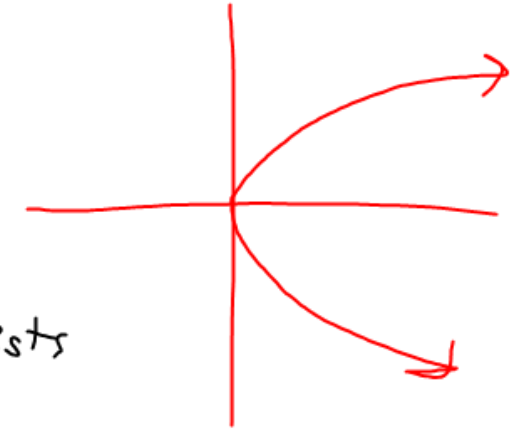
passes vert test so orig is a function

$f(x) = x^2$



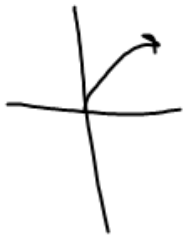
fails horz. means the inverse is not a function

$f(x) = \pm\sqrt{x}$



One-to-one functions pass both tests

$f(x) = \sqrt{x}$ orig.



$f(x) = x^2$ inverse

$2f(x+3)-2$

$2(x+3)^2-2$

$2\sqrt{x+3}-2$

$2|x+3|-2$

$2(x+3)^3-2$

$f(x) = x^2 - x + 1$

$f(x+h) = (x+h)^2 - (x+h) + 1$

$(x+h)(x+h)$

$$\frac{x^2+2xh+h^2-x-h+1-(x^2-x+1)}{h}$$

$$\frac{x^2+2xh+h^2-x-h+1-x^2+x-1}{h}$$

$$\frac{2xh+h^2-h}{h} \Rightarrow \boxed{2x-1+h}$$

when $x=2$

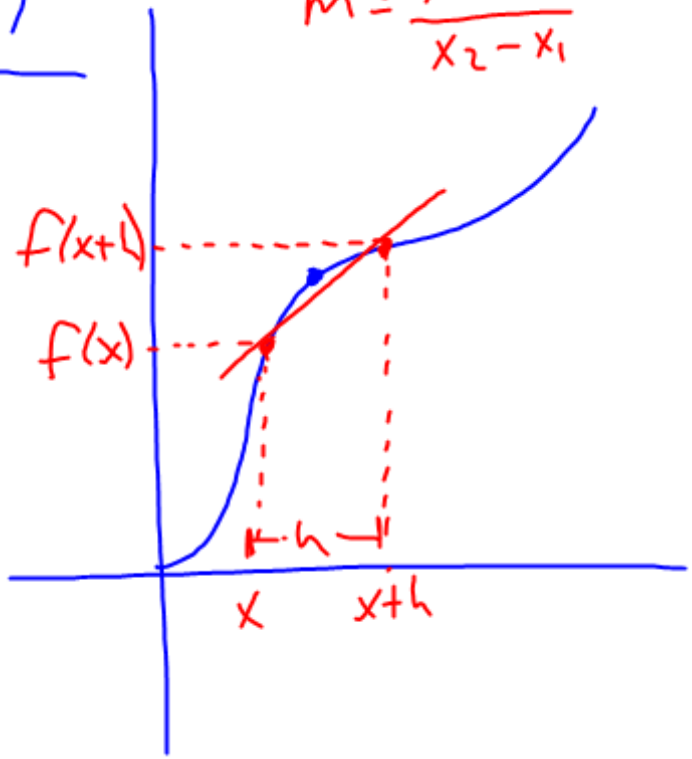
$2(2)-1+h$

$3+h$

$$\frac{f(x+h)-f(x)}{h}, \quad h \neq 0$$

D:

$$m = \frac{y_2-y_1}{x_2-x_1}$$



5 good Problems

① Find the inverse $f(x) = 3\left(\frac{\sqrt{x-4}}{7}\right)$, is it 1 to 1?

② Graph w/o calc. $f(x) = -3\sqrt{4-x} + 5$

③ Find Difference Quotient (p. 23)

ⓐ $f(x) = 5x - 7$

ⓑ $f(x) = 5x^2 - x + 8$

ⓒ $f(x) = x^3 - 4x$

$$\frac{f(x+h) - f(x)}{h}$$